



General Purpose Probe Interface

Operating Note/August 1987

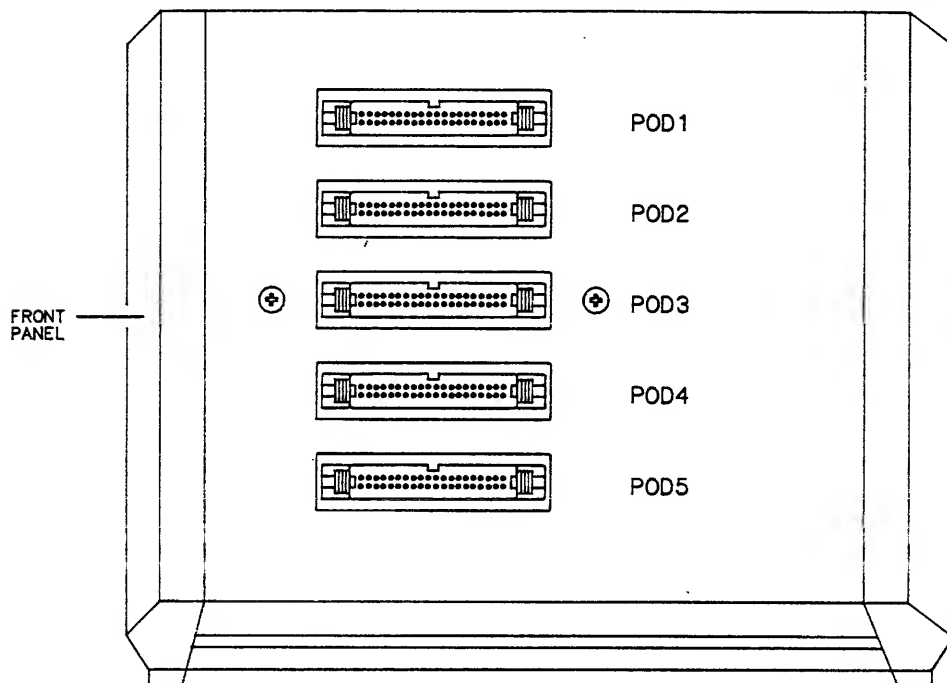


Figure 1. HP 10269C General Purpose Probe Interface

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Introduction

The HP 10269C General Purpose Probe Interface provides a convenient method of connecting the HP 1650A, HP 1651A, and HP 16510A logic analyzers to digital systems through dedicated interface cards. These dedicated interface cards (preprocessors) allow you to define which system signals are supplied to the analyzer. Refer to Appendix A for the specifications of the HP 10269C.

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Connecting to Systems

The HP 10269C has two 60-pin connectors which allow connection to dedicated interface cards (ordered separately). A variety of connectors and cables are available for connecting directly to your system.

The HP 1650A, HP 1651A, and HP 16510A logic analyzer probes plug directly into connectors on the HP 10269C Interface. This eliminates the need for individual probe lead connectors.

For specific connections see the documentation that is shipped with each of the dedicated interface cards (preprocessors).

Installation

A dedicated interface card is installed on the underside of the HP 10269C General Purpose Probe Interface and connected to it by two internal cables (see figure 2). Ribbon cables from the interface card connect the general purpose probe interface to your target system. For more specific instructions see the documentation supplied with each of the dedicated interface cards.

Connect the probe pods from the logic analyzer to the pod sockets on the general purpose probe interface. These sockets are labeled pod 1 through 5 as shown in figure 1.

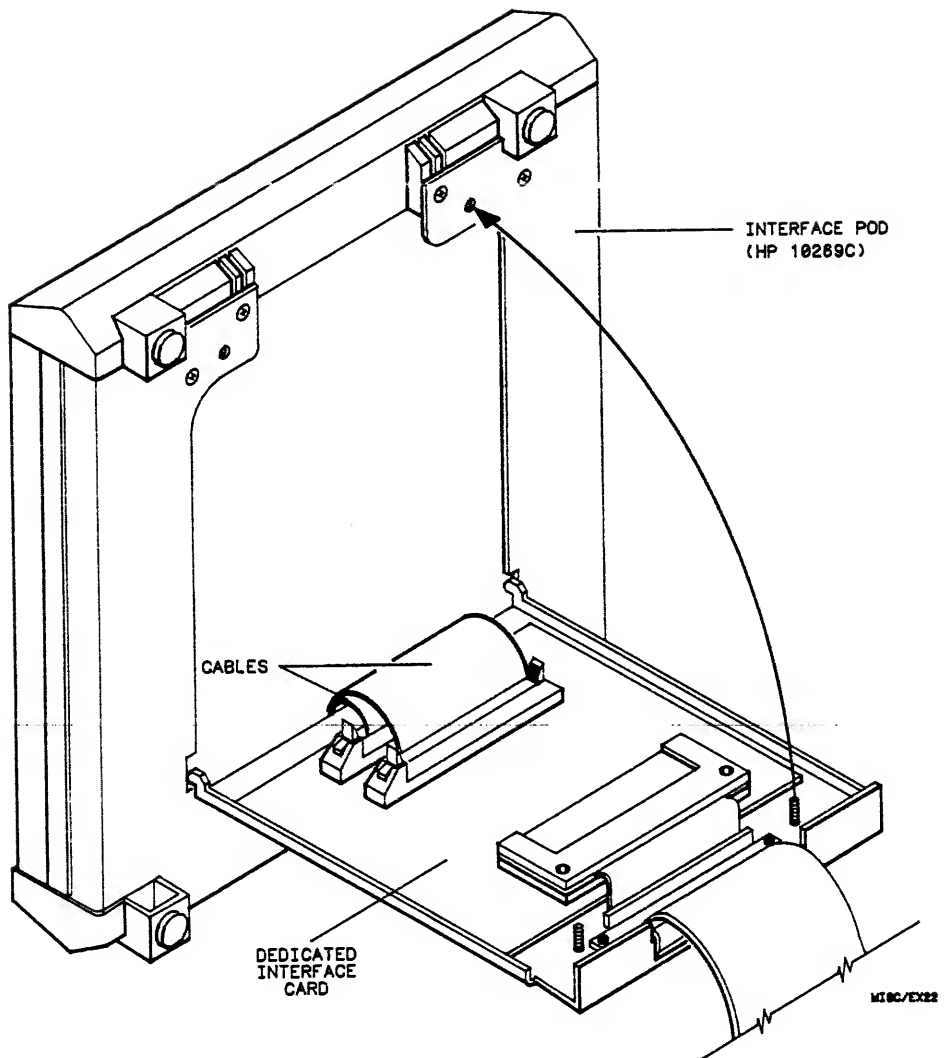


Figure 2. Installing an Interface Card in the HP 10269C

General Description

The HP 10269C General Purpose Probe Interface is a versatile device. With an interface card installed, it provides a flexible and convenient way to probe your target system with the HP 1650A, HP 1651A, and HP 16510A logic analyzers. The software supplied on the flexible disc with the interface card or preprocessor contains setups for the Format and Trace Specification menus (where applicable). It also contains an inverse assembler routine that allows the logic analyzer to display microprocessor data in the assembly language of the corresponding microprocessor.

Microprocessor-specific interface modules, with corresponding software (on flexible discs) are available for many of the most popular microprocessors. You can use these interface modules to quickly probe the 8-bit, 16-bit, or 32-bit microprocessor target system or target system bus of your choice.

These microprocessor-specific interface modules often contain buffers and gating circuits. The buffers supply address, data, clock, and status signals from the target system to the pod connectors on the general purpose probe. For detailed descriptions of these interface modules, refer to the documentation supplied with each interface card or module.

A user definable interface module is also available. It can be configured through a wirewrap interface to specific test ports in your system, or tailored to a specific configuration for a custom microprocessor.

Slow Clock

If you have the interface module hooked up and running and observe a slow clock or no activity on any pods of the interface board, check the +5 V supply coming from the analyzer. To do this:

1. Disconnect one of the logic analyzer cables from the HP 10269C and measure across pins 1 and 2 (see figure 3).

* If +5 V isn't observed across these pins, check the internal preprocessor fuse on the HP 1650A, HP 1651A, or HP 16510A Logic Analyzer. For information on checking this fuse, refer to the HP 1650A/51A or HP 16510A service manuals.

* If +5 V is observed across these pins and you feel confident that the +5 V is getting to the interface module, then the interface module is most likely the problem. If this is the case, contact your nearest Hewlett-Packard Sales/Service Office for information on servicing the board.

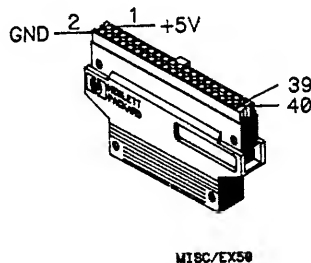


Figure 3. Pinout for the Logic Analyzer Cable

HP 10269C Pod Connector Pin-Outs

The HP 10269C acts as a terminator for the HP 1650A, HP 1651A, and HP 16510A logic analyzer probes. It also routes the +5 V power from the logic analyzer probes to the microprocessor interface modules. All of this is accomplished through the five 40-pin connectors on the top of the HP 10269C. Table 1 lists the pin-outs for the odd pins of the five connectors. Figure 4 shows the pin-out for the pod connectors.

Table 1. Pin-Outs for Pods 1 through 5

| Pin | Function | Pin | Function |
|-----|------------|-----|------------|
| 1 | +5 V Power | 21 | Ch. 8 |
| 3 | N/C | 23 | Ch. 7 |
| 5 | CLK | 25 | Ch. 6 |
| 7 | Ch. 15 | 27 | Ch. 5 |
| 9 | Ch. 14 | 29 | Ch. 4 |
| 11 | Ch. 13 | 31 | Ch. 3 |
| 13 | Ch. 12 | 33 | Ch. 2 |
| 15 | Ch. 11 | 35 | Ch. 1 |
| 17 | Ch. 10 | 37 | Ch. 0 |
| 19 | Ch. 9 | 39 | +5 V Power |

N/C = No connection

Note

Pins 2 and 40 are grounds for the +5 volt power. All the other even-numbered pins are signal grounds.

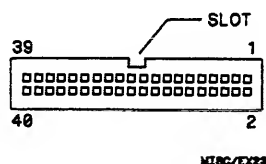


Figure 4. Pin-Outs for the HP 10269C Pods

A termination network is associated with each clock and data channel on the logic analyzer probe. Figure 5 shows the network used in the HP 10269C.

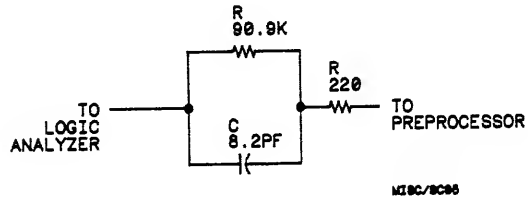


Figure 5. Termination Network for the Clock and Data Channels

A

General Information

Specifications

Input Connectors: Two 60-pin connectors to the dedicated interface card.

Output Connectors: Five data connectors for logic analyzer probes.

Instrument Capability: HP 1650A, HP 1651A, or HP 16510A logic analyzers.

Weight: 0.65 kg (1.45 lb)

Dimensions: See figure A-1.

Replaceable Parts

Replaceable parts for the HP 10269C are shown in table A-1. When ordering a part, address the order to the nearest Hewlett-Packard Sales/Service Office. Include the HP model number of the probe and a complete description of the part, including the HP part number.

Table A-1. HP 10269C Replaceable Parts

| Part Number | Description | Quantity |
|-------------|---------------------|----------|
| 0403-0179 | Plastic Bumper | 4 |
| 10269-04102 | Bottom Cover | 1 |
| 10269-04113 | Top Cover | 1 |
| 10269-66503 | Interface Board | 1 |
| 10269-90910 | Op Note Manual | 1 |
| 10269-94302 | Ident. Label | 1 |
| 10269-94303 | Blank Label | 1 |
| 2200-0107 | MS 4-40 0.376LG | 4 |
| 2200-0512 | Screw 4-40 0.312 LG | 8 |
| 2200-0762 | MS 4-40 0.250 LG | 2 |
| 5951-1125 | Label (Serial No.) | 1 |
| 64232-60201 | Endcap Assembly | 2 |

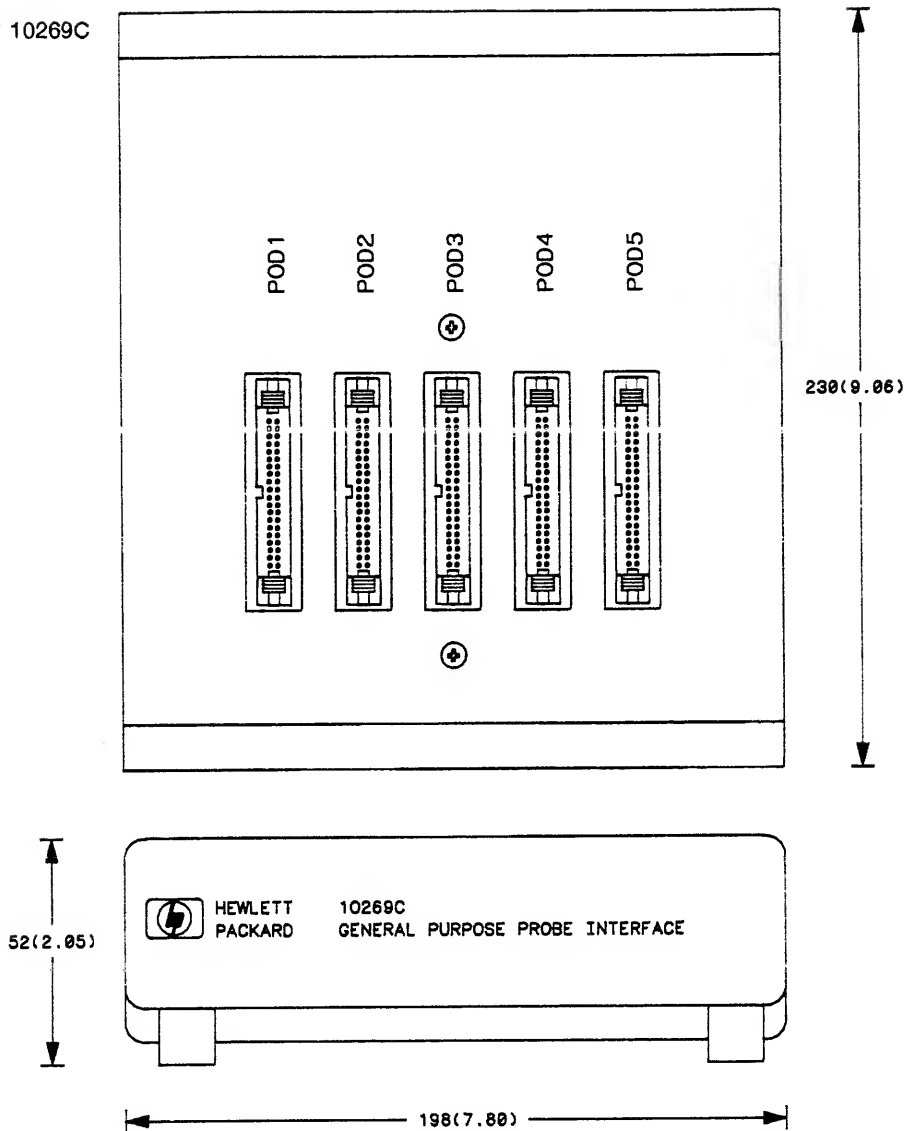


Figure A-1. HP 10269C Dimensions

10269C/EX24

Note

The dimensions in figure A-1 are displayed in millimetres and (inches).

B**HP 10269C Signal Routing****Signal Routing
from Pod
Connectors**

Table B-1 shows how the signals are routed from the pod connectors on the top of the HP 10269C to the ribbon cables that connect to the interface modules.

Table B-1. HP 10269C Signal Routing

| Pod Connector | | Ribbon Cable | |
|---------------|---------|--------------|-----|
| Pod | Channel | Cable | Pin |
| 1 | 0 | J3 | 45 |
| 1 | 1 | J3 | 46 |
| 1 | 2 | J3 | 47 |
| 1 | 3 | J3 | 48 |
| 1 | 4 | J3 | 49 |
| 1 | 5 | J3 | 50 |
| 1 | 6 | J3 | 51 |
| 1 | 7 | J3 | 52 |
| 1 | 8 | J3 | 53 |
| 1 | 9 | J3 | 54 |
| 1 | 10 | J3 | 55 |
| 1 | 11 | J3 | 56 |
| 1 | 12 | J3 | 57 |
| 1 | 13 | J3 | 58 |
| 1 | 14 | J3 | 59 |
| 1 | 15 | J3 | 60 |
| 1 | J CLK | J3 | 23 |

Table B-1. HP 10269C Signal Routing (Continued)

| Pod Connector | | Ribbon Cable | |
|---------------|---------|--------------|-----|
| Pod | Channel | Cable | Pin |
| 2 | 0 | J4 | 1 |
| 2 | 1 | J4 | 2 |
| 2 | 2 | J4 | 3 |
| 2 | 3 | J4 | 4 |
| 2 | 4 | J4 | 5 |
| 2 | 5 | J4 | 6 |
| 2 | 6 | J4 | 7 |
| 2 | 7 | J4 | 8 |
| 2 | 8 | J4 | 9 |
| 2 | 9 | J4 | 10 |
| 2 | 10 | J4 | 13 |
| 2 | 11 | J4 | 14 |
| 2 | 12 | J4 | 15 |
| 2 | 13 | J4 | 16 |
| 2 | 14 | J4 | 17 |
| 2 | 15 | J4 | 18 |
| 2 | K CLK | J3 | 21 |
| 3 | 0 | J4 | 19 |
| 3 | 1 | J4 | 20 |
| 3 | 2 | J4 | 21 |
| 3 | 3 | J4 | 22 |
| 3 | 4 | J3 | 41 |
| 3 | 5 | J3 | 42 |
| 3 | 6 | J3 | 43 |
| 3 | 7 | J3 | 44 |

Table B-1. HP 10269C Signal Routing (Continued)

| Pod Connector | | Ribbon Cable | |
|---------------|---------|--------------|-----|
| Pod | Channel | Cable | Pin |
| 3 | 8 | J4 | 39 |
| 3 | 9 | J4 | 40 |
| 3 | 10 | J4 | 41 |
| 3 | 11 | J4 | 42 |
| 3 | 12 | J4 | 43 |
| 3 | 13 | J4 | 44 |
| 3 | 14 | J4 | 45 |
| 3 | 15 | J4 | 46 |
| 3 | L CLK | J3 | 17 |
| 4 | 0 | J4 | 58 |
| 4 | 1 | J4 | 59 |
| 4 | 2 | J4 | 60 |
| 4 | 3 | J3 | 1 |
| 4 | 4 | J3 | 2 |
| 4 | 5 | J3 | 3 |
| 4 | 6 | J3 | 4 |
| 4 | 7 | J3 | 6 |
| 4 | 8 | J3 | 8 |
| 4 | 9 | J3 | 15 |
| 4 | 10 | J3 | 24 |
| 4 | 11 | J3 | 25 |
| 4 | 12 | J3 | 26 |
| 4 | 13 | J3 | 27 |
| 4 | 14 | J3 | 28 |
| 4 | 15 | J3 | 29 |
| 4 | M CLK | J3 | 19 |

Table B-1. HP 10269C Signal Routing (Continued)

| Pod Connector | | Ribbon Cable | |
|---------------|---------|--------------|-----|
| Pod | Channel | Cable | Pin |
| 5 | 0 | J3 | 30 |
| 5 | 1 | J3 | 31 |
| 5 | 2 | J3 | 32 |
| 5 | 3 | J3 | 33 |
| 5 | 4 | J3 | 34 |
| 5 | 5 | J3 | 35 |
| 5 | 6 | J3 | 36 |
| 5 | 7 | J3 | 37 |
| 5 | 8 | J4 | 47 |
| 5 | 9 | J4 | 48 |
| 5 | 10 | J4 | 51 |
| 5 | 11 | J4 | 52 |
| 5 | 12 | J4 | 53 |
| 5 | 13 | J4 | 54 |
| 5 | 14 | J4 | 55 |
| 5 | 15 | J4 | 56 |
| 5 | N CLK | J3 | 11 |

The following pins are not connected:

- * Cable J3 pins 5, 7, 9, 10, 12, 16, 18, 20 and 22; and
- * Cable J4 pins 49, 50, and 57.

Signal grounds are on:

- * Cable J3 pins 13, 14, and 38 through 40; and
- * Cable J4 pins 29 through 36.

Note

Power for the interface modules comes from the logic analyzer and is routed through pins 11, 12, 23, and 24 of ribbon cable J4. The return path for power is pins 25 through 28, 37, and 38 of ribbon cable J4.

Signal Routing from Ribbon Cables

Table B-2 shows the signal routing from ribbon cable connectors J3 and J4 to the pods on the top of the HP 10269C. This is the same information that is presented in table B-1, except that it has been rearranged for your convenience.

Table B-2. HP 10269C Signal Routing

| Cable J3 | | | Cable J4 | | |
|---------------|---------|---------|---------------|--------|---------|
| Pod Connector | | | Pod Connector | | |
| Pin | Pod | Channel | Pin | Pod | Channel |
| 1 | 4 | 3 | 1 | 2 | 0 |
| 2 | 4 | 4 | 2 | 2 | 1 |
| 3 | 4 | 5 | 3 | 2 | 2 |
| 4 | 4 | 6 | 4 | 2 | 3 |
| 5 | N/C | | 5 | 2 | 4 |
| 6 | 4 | 7 | 6 | 2 | 5 |
| 7 | N/C | | 7 | 2 | 6 |
| 8 | 4 | 8 | 8 | 2 | 7 |
| 9 | N/C | | 9 | 2 | 8 |
| 10 | N/C | | 10 | 2 | 9 |
| 11 | 5 | N CLK | 11 | +5 VDC | |
| 12 | N/C | | 12 | +5 VDC | |
| 13 | SIG GND | | 13 | 2 | 10 |
| 14 | SIG GND | | 14 | 2 | 11 |
| 15 | 4 | 9 | 15 | 2 | 12 |
| 16 | N/C | | 16 | 2 | 13 |
| 17 | 3 | L CLK | 17 | 2 | 14 |
| 18 | N/C | | 18 | 2 | 15 |
| 19 | 4 | M CLK | 19 | 3 | 0 |
| 20 | N/C | | 20 | 3 | 1 |

N/C = No connection

Table B-2. HP 10269C Signal Routing (Continued)

| Cable J3 | | | Cable J4 | | |
|---------------|---------|---------|---------------|---------|---------|
| Pod Connector | | | Pod Connector | | |
| Pin | Pod | Channel | Pin | Pod | Channel |
| 21 | 2 | K CLK | 21 | 3 | 2 |
| 22 | N/C | | 22 | 3 | 3 |
| 23 | 1 | J CLK | 23 | +5 VDC | |
| 24 | 4 | 10 | 24 | +5 VDC | |
| 25 | 4 | 11 | 25 | PWR GND | |
| 26 | 4 | 12 | 26 | PWR GND | |
| 27 | 4 | 13 | 27 | PWR GND | |
| 28 | 4 | 14 | 28 | PWR GND | |
| 29 | 4 | 15 | 29 | SIG GND | |
| 30 | 5 | 0 | 30 | SIG GND | |
| 31 | 5 | 1 | 31 | SIG GND | |
| 32 | 5 | 2 | 32 | SIG GND | |
| 33 | 5 | 3 | 33 | SIG GND | |
| 34 | 5 | 4 | 34 | SIG GND | |
| 35 | 5 | 5 | 35 | SIG GND | |
| 36 | 5 | 6 | 36 | SIG GND | |
| 37 | 5 | 7 | 37 | PWR GND | |
| 38 | SIG GND | | 38 | PWR GND | |
| 39 | SIG GND | | 39 | 3 | 8 |
| 40 | SIG GND | | 40 | 3 | 9 |

N/C = No connection

Table B-2. HP 10269C Signal Routing (Continued)

| Cable J3 | | | Cable J4 | | |
|---------------|-----|---------|---------------|-----|---------|
| Pod Connector | | | Pod Connector | | |
| Pin | Pod | Channel | Pin | Pod | Channel |
| 41 | 3 | 4 | 41 | 3 | 10 |
| 42 | 3 | 5 | 42 | 3 | 11 |
| 43 | 3 | 6 | 43 | 3 | 12 |
| 44 | 3 | 7 | 44 | 3 | 13 |
| 45 | 1 | 0 | 45 | 3 | 14 |
| 46 | 1 | 1 | 46 | 3 | 15 |
| 47 | 1 | 2 | 47 | 5 | 8 |
| 48 | 1 | 3 | 48 | 5 | 9 |
| 49 | 1 | 4 | 49 | N/C | |
| 50 | 1 | 5 | 50 | N/C | |
| 51 | 1 | 6 | 51 | 5 | 10 |
| 52 | 1 | 7 | 52 | 5 | 11 |
| 53 | 1 | 8 | 53 | 5 | 12 |
| 54 | 1 | 9 | 54 | 5 | 13 |
| 55 | 1 | 10 | 55 | 5 | 14 |
| 56 | 1 | 11 | 56 | 5 | 15 |
| 57 | 1 | 12 | 57 | N/C | |
| 58 | 1 | 13 | 58 | 4 | 0 |
| 59 | 1 | 14 | 59 | 4 | 1 |
| 60 | 1 | 15 | 60 | 4 | 2 |

N/C = No connection

HP 10269C Connector Pin-Outs

Figure B-1 shows the pin-outs for the connectors on ribbon cables J3 and J4. Pin 1 is indicated on the connector by a small arrowhead molded into the side of the connector.

Figure B-2 shows the pin-outs for the pod connectors.

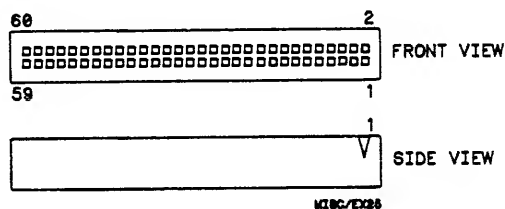


Figure B-1. Pin-Out for J3 and J4

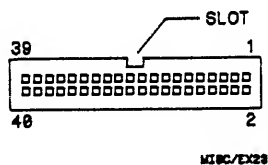


Figure B-2. Pin-Outs for the HP 10269C Pods

C

Wiring Changes for the HP 10304B

Introduction

Certain 8085 Preprocessors (HP 10304B) must be updated to work with the HP 1650A, HP 1651A, and HP 16510A logic analyzers. These preprocessors can be easily updated by adding a jumper to re-route a clock signal, which allows the logic analyzer to probe the 8085 with only two logic analyzer probes.

The signal being re-routed is the ALE signal from the 8085. ALE is used as the slave clock for the logic analyzer and is essential for proper operation of the preprocessor.

The boards requiring modification are HP part numbers:

64655-66501

64655-66502

64655-66503

64655-66504

HP part number 64655-66505 doesn't need to be modified.

Updating the Preprocessor

To update the preprocessor:

1. Remove the printed circuit board from the preprocessor sheet metal.
2. Locate pin 1 of the blue 60-pin connector labeled J3. The connector is shown in figure C-1 from the component side of the PC board.

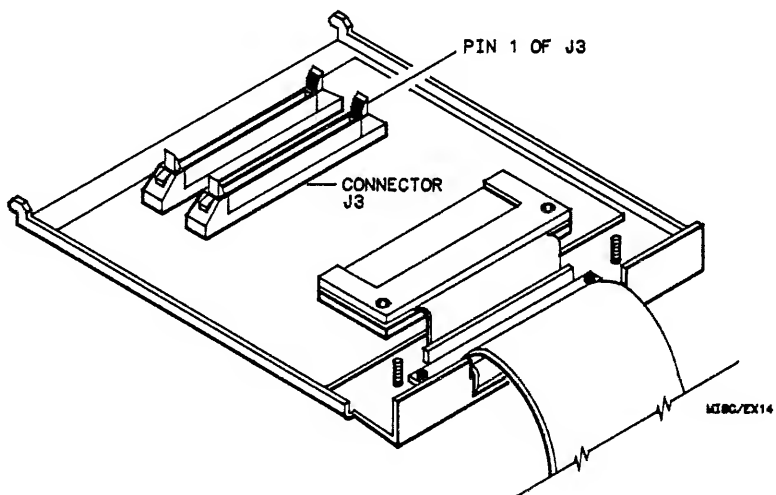


Figure C-1. Component Side of the PC Board

3. Solder a jumper from pin 17 of J3 to pin 21 of J3. Figure C-2 shows the location of the jumper on connector J3 from the circuit side of the PC board.

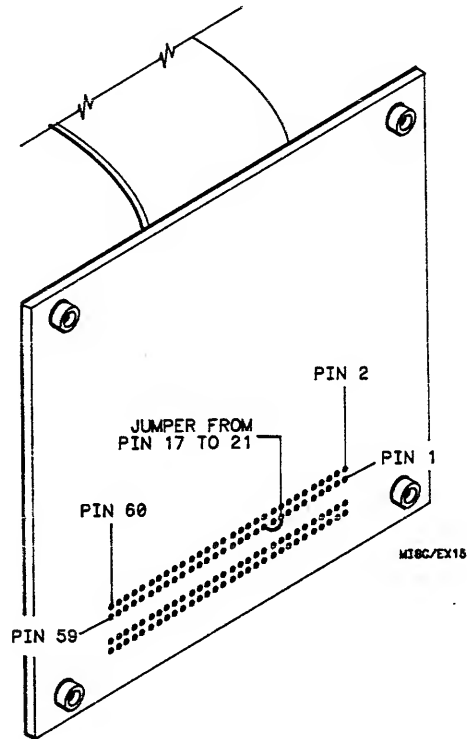


Figure C-2. Circuit Side of the PC Board

4. Carefully re-assemble the PC board on the preprocessor sheet metal and reconnect any loose hardware.

Note

It may be useful to attach a sticker to the sheet metal of the preprocessor indicating that the preprocessor has been updated.

**Additional
Information**

This hardware modification allows the 8085 preprocessor to work properly with the HP 1650A, HP 1651A, and HP 16510A logic analyzers. The following equipment is also required:

| HP Part Number | Description |
|----------------|--|
| 10269C | Adapts the 8085 Preprocessor to the HP 1650A/51A and HP 16510A probes |
| 10304-13015 | 8085 inverse assembler software for the HP 1650A/51A and HP 16510A logic analyzers |
| 10304-90910 | 8085 Operating Note for the HP 1650A/51A and HP 16510A |

Product Warranty

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